

## PATENT COOPERATION TREATY

PCT

## NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents  
 United States Patent and Trademark  
 Office  
 Box PCT  
 Washington, D.C. 20231  
 ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

|   |   |
|---|---|
| <b>Date of mailing</b> (day/month/year)<br>12 May 2000 (12.05.00)               |   |
| <b>International application No.</b><br>PCT/GB99/03290                          | <b>Applicant's or agent's file reference</b><br>REPO5851WO          |
| <b>International filing date</b> (day/month/year)<br>05 October 1999 (05.10.99) | <b>Priority date</b> (day/month/year)<br>06 October 1998 (06.10.98) |
| <b>Applicant</b><br>ANGUS, Katherine, Louise et al                              |   |

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

10 April 2000 (10.04.00)

☐ in a notice effecting later election filed with the International Bureau on:2. The election ☒ was

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO  
 34, chemin des Colombettes  
 1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

Juan Cruz

Telephone No.: (41-22) 338.83.38

W/V

# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

|  |  |  |
|--|--|--|
| Applicant's or agent's file reference<br><b>REP05851W0</b> | <b>FOR FURTHER ACTION</b> <small>see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.</small> |  |
| International application No.<br><b>PCT/GB 99/ 03290</b>   | International filing date (day/month/year)<br><b>05/10/1999</b>  | (Earliest) Priority Date (day/month/year)<br><b>06/10/1998</b> |
| Applicant<br><b>BIOPROCESSING LTD. et al.</b>              |  |  |

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the report**

a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ Certain claims were found unsearchable (see Box I).

3. ☐ Unity of invention is lacking (see Box II).

4. With regard to the title,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No. \_\_\_\_\_

☐ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

☐ None of the figures.

**/GB 99/03290**

According to International Patent Classification (IPC) or to both national classification and IPC

### B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 B01J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

### C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages   | Relevant to claim No. |
|------------|--|-----------------------|
| X          | WO 91 17830 A (BIO ISOLATES LTD)<br>28 November 1991 (1991-11-28)<br>cited in the application                                  | 1,4,5,9,<br>10        |
| Y          | page 3, line 13 - line 15; claims 1,9,10   | 6,7,11                |
| Y          | WO 94 11103 A (WILLIAMS)<br>26 May 1994 (1994-05-26)<br>page 2, line 7 - line 13; claims 1,3,5,7,8<br>page 3, line 6 - line 14 | 6,7,11                |
| X          | EP 0 451 706 A (SAKAI ENGINEERING)<br>16 October 1991 (1991-10-16)<br>page 4, line 17<br>page 5, line 9 - line 11              | 1,4,5                 |

-/-

☒ Further documents are listed in the continuation of box C.

**Y** Patent family members are listed in annex.

<sup>a</sup> Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "Z" document member of the same patent family

Date of the actual completion of the international search

**26 November 1999**

Date of mailing of the international search report

**08/12/1999**

**Name and mailing address of the ISA**  
European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax (+31-70) 340-3018

**Authorized officer**

**Hilgenga, K**

## INTERNATIONAL SEARCH REPORT

International Application No

GB 99/03290

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages   | Relevant to claim No. |
|------------|--|-----------------------|
| X          | US 4 154 676 A (D.T. JONES)<br>15 May 1979 (1979-05-15)<br>column 2, line 44<br>column 2, line 25<br>column 4, line 24 - line 27   | 1,4-7,<br>9-11        |
| X          | US 4 332 916 A (B.P. THILL)<br>1 June 1982 (1982-06-01)<br>column 1, line 56 - line 60; claim 1  | 1,2,4,5,<br>10        |
| X          | GB 1 226 448 A (TASMAN VACCINE LAB.)<br>31 March 1971 (1971-03-31)<br>cited in the application<br>page 1, line 82<br>page 3; claim 1; example 6  | 1,4,5,10              |
| X          | US 5 162 404 A (RAINER NORMAN B)<br>10 November 1992 (1992-11-10)<br>claim 1   | 1,4,5,8               |
| A          | DATABASE WPI<br>Section Ch, Week 199029<br>Derwent Publications Ltd., London, GB;<br>Class A96, AN 1990-220679<br>XP002123920<br>& JP 02 149341 A (KANEGAFUCHI CHEM KK),<br>7 June 1990 (1990-06-07)<br>abstract   | 1,4,5                 |
| A          | DATABASE WPI<br>Section Ch, Week 198646<br>Derwent Publications Ltd., London, GB;<br>Class A96, AN 1986-303144<br>XP002123921<br>& JP 61 226059 A (AGENCY OF IND SCI &<br>TECHNOLOGY). 7 October 1986 (1986-10-07) | 1,4,5                 |
| A          | GB 914 421 A (SPONCEL LIMITED)<br>page 2, line 7 - line 8  | 1,4-7                 |
| A          | EP 0 837 091 A (YAMAGUCHI)<br>22 April 1998 (1998-04-22)<br>claim 1  | 1-5                   |

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

GB 99/03290

| Patent document<br>cited in search report |   | Publication<br>date | Patent family<br>member(s)  | Publication<br>date  |
|---|---|---------------------|---|--|
| WO 9117830                                | A | 28-11-1991          | DE 69113266 D<br>DE 69113266 T<br>DK 530258 T<br>EP 0530258 A<br>ES 2080316 T<br>US 5492723 A   | 26-10-1995<br>24-10-1996<br>05-02-1996<br>10-03-1993<br>01-02-1996<br>20-02-1996   |
| WO 9411103                                | A | 26-05-1994          | AU 5427394 A<br>EP 0621802 A  | 08-06-1994<br>02-11-1994   |
| EP 451706                                 | A | 16-10-1991          | JP 3290443 A<br>AT 101813 T<br>CA 2039843 A,C<br>DE 69101225 D<br>DE 69101225 T<br>DK 451706 T<br>US 5298615 A  | 20-12-1991<br>15-03-1994<br>07-10-1991<br>31-03-1994<br>14-07-1994<br>28-03-1994<br>29-03-1994   |
| US 4154676                                | A | 15-05-1979          | GB 1387265 A<br>AU 469879 B<br>AU 4475572 A<br>BE 786602 A<br>CA 975358 A<br>CH 606117 A<br>DE 2235902 A<br>ES 405084 A<br>FR 2147139 A<br>IE 36584 B<br>IL 39934 A<br>IT 963295 B<br>JP 48048583 A<br>JP 53015470 B<br>NL 7210142 A,B,<br>NO 137755 B<br>SE 408271 B<br>US 3905954 A<br>ZA 7205059 A | 12-03-1975<br>26-02-1976<br>24-01-1974<br>16-11-1972<br>30-09-1975<br>13-10-1978<br>01-02-1973<br>01-07-1975<br>09-03-1973<br>08-12-1976<br>31-03-1976<br>10-01-1974<br>10-07-1973<br>25-05-1978<br>25-01-1973<br>09-01-1978<br>05-06-1979<br>16-09-1975<br>25-04-1973 |
| US 4332916                                | A | 01-06-1982          | NONE  |  |
| GB 1226448                                | A | 31-03-1971          | BE 736062 A<br>DE 1935984 A<br>FR 2012985 A<br>NL 6910646 A<br>US 3573277 A   | 16-12-1969<br>22-01-1970<br>27-03-1970<br>19-01-1970<br>30-03-1971   |
| US 5162404                                | A | 10-11-1992          | US 5002984 A<br>AU 635302 B<br>AU 6103490 A<br>CA 2023387 A<br>JP 3185024 A<br>US 5096946 A<br>US 5169883 A<br>US 5064540 A   | 26-03-1991<br>18-03-1993<br>21-02-1991<br>19-02-1991<br>13-08-1991<br>17-03-1992<br>08-12-1992<br>12-11-1991   |
| JP 2149341                                | A | 07-06-1990          | JP 1943236 C<br>JP 6067472 B  | 23-06-1995<br>31-08-1994   |

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

GB 99/03290

| Patent document<br>cited in search report | Publication<br>date | Patent family<br>member(s)                   | Publication<br>date                    |
|---|---------------------|--|--|
| JP 61226059 A                             | 07-10-1986          | JP 1026709 B<br>JP 1540133 C                 | 25-05-1989<br>31-01-1990               |
| GB 914421 A                               |                     | NONE   |  |
| EP 837091 A                               | 22-04-1998          | AU 2407397 A<br>CA 2224879 A<br>WO 9741169 A | 19-11-1997<br>06-11-1997<br>06-11-1997 |

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/GB 99/03290

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 B01J20/28 B01J20/32

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 B01J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

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Date of the actual completion of the international search

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Date of mailing of the international search report

08/12/1999

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Hilgenga, K

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| A  | GB 914 421 A (SPONCEL LIMITED)<br>page 2, line 7 - line 8<br>---  | 1,4-7                 |
| A  | EP 0 837 091 A (YAMAGUCHI)<br>22 April 1998 (1998-04-22)<br>claim 1<br>-----  | 1-5                   |



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|---|---------------------|----------------------------|---------------------|
| WO 9117830 A                              | 28-11-1991          | DE 69113266 D              | 26-10-1995          |
|   |                     | DE 69113266 T              | 24-10-1996          |
|   |                     | DK 530258 T                | 05-02-1996          |
|   |                     | EP 0530258 A               | 10-03-1993          |
|   |                     | ES 2080316 T               | 01-02-1996          |
|   |                     | US 5492723 A               | 20-02-1996          |
| WO 9411103 A                              | 26-05-1994          | AU 5427394 A               | 08-06-1994          |
|   |                     | EP 0621802 A               | 02-11-1994          |
| EP 451706 A                               | 16-10-1991          | JP 3290443 A               | 20-12-1991          |
|   |                     | AT 101813 T                | 15-03-1994          |
|   |                     | CA 2039843 A,C             | 07-10-1991          |
|   |                     | DE 69101225 D              | 31-03-1994          |
|   |                     | DE 69101225 T              | 14-07-1994          |
|   |                     | DK 451706 T                | 28-03-1994          |
|   |                     | US 5298615 A               | 29-03-1994          |
| US 4154676 A                              | 15-05-1979          | GB 1387265 A               | 12-03-1975          |
|   |                     | AU 469879 B                | 26-02-1976          |
|   |                     | AU 4475572 A               | 24-01-1974          |
|   |                     | BE 786602 A                | 16-11-1972          |
|   |                     | CA 975358 A                | 30-09-1975          |
|   |                     | CH 606117 A                | 13-10-1978          |
|   |                     | DE 2235902 A               | 01-02-1973          |
|   |                     | ES 405084 A                | 01-07-1975          |
|   |                     | FR 2147139 A               | 09-03-1973          |
|   |                     | IE 36584 B                 | 08-12-1976          |
|   |                     | IL 39934 A                 | 31-03-1976          |
|   |                     | IT 963295 B                | 10-01-1974          |
|   |                     | JP 48048583 A              | 10-07-1973          |
|   |                     | JP 53015470 B              | 25-05-1978          |
|   |                     | NL 7210142 A,B,            | 25-01-1973          |
|   |                     | NO 137755 B                | 09-01-1978          |
|   |                     | SE 408271 B                | 05-06-1979          |
|   |                     | US 3905954 A               | 16-09-1975          |
|   |                     | US 3905954 A               | 25-04-1973          |
| US 4332916 A                              | 01-06-1982          | NONE                       |                     |
| GB 1226448 A                              | 31-03-1971          | BE 736062 A                | 16-12-1969          |
|   |                     | DE 1935984 A               | 22-01-1970          |
|   |                     | FR 2012985 A               | 27-03-1970          |
|   |                     | NL 6910646 A               | 19-01-1970          |
|   |                     | US 3573277 A               | 30-03-1971          |
| US 5162404 A                              | 10-11-1992          | US 5002984 A               | 26-03-1991          |
|   |                     | AU 635302 B                | 18-03-1993          |
|   |                     | AU 6103490 A               | 21-02-1991          |
|   |                     | CA 2023387 A               | 19-02-1991          |
|   |                     | JP 3185024 A               | 13-08-1991          |
|   |                     | US 5096946 A               | 17-03-1992          |
|   |                     | US 5169883 A               | 08-12-1992          |
|   |                     | US 5064540 A               | 12-11-1991          |
| JP 2149341 A                              | 07-06-1990          | JP 1943236 C               | 23-06-1995          |
|   |                     | JP 6067472 B               | 31-08-1994          |

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 99/03290

| Patent document<br>cited in search report | Publication<br>date | Patent family<br>member(s)                   | Publication<br>date                    |
|---|---------------------|--|--|
| JP 61226059 A                             | 07-10-1986          | JP 1026709 B<br>JP 1540133 C                 | 25-05-1989<br>31-01-1990               |
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PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION  
International Bureau



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

|   |   |  |
|---|---|--|
| <b>(51) International Patent Classification <sup>7</sup> :</b><br><b>B01J 20/28, 20/32</b>  | <b>A1</b>   | <b>(11) International Publication Number:</b> <b>WO 00/20114</b><br><b>(43) International Publication Date:</b> 13 April 2000 (13.04.00) |
| <b>(21) International Application Number:</b> PCT/GB99/03290<br><b>(22) International Filing Date:</b> 5 October 1999 (05.10.99)<br><b>(30) Priority Data:</b><br>9821783.9 6 October 1998 (06.10.98) GB<br><b>(71) Applicant (for all designated States except US):</b> BIOPROCESSING LTD. [GB/GB]; Unit 31, No. 1 Industrial Estate, Medomsley Road, Consett, Co. Durham DH8 6SZ (GB).<br><b>(72) Inventors; and</b><br><b>(75) Inventors/Applicants (for US only):</b> ANGUS, Katherine, Louise [GB/GB]; Bioprocessing Ltd., Unit 31, No. 1 Industrial Estate, Medomsley Road, Consett, Co. Durham DH8 6SZ (GB). HUTTON, David, Alan [GB/GB]; Bioprocessing Ltd., Unit 31, No. 1 Industrial Estate, Medomsley Road, Consett, Co. Durham DH8 6SZ (GB). NOEL, Robert, John [GB/GB]; Bioprocessing Ltd., Unit 31, No. 1 Industrial Estate, Medomsley Road, Consett, Co. Durham DH8 6SZ (GB). TAYLOR, Linda [GB/GB]; Bioprocessing Ltd., Unit 31, No. 1 Industrial Estate, Medomsley Road, Consett, Co. Durham DH8 6SZ (GB).<br><b>(74) Agent:</b> GILL JENNINGS & EVERY; Broadgate House, 7 Eldon Street, London EC2M 7LH (GB). | <b>(81) Designated States:</b> AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).<br><br><b>Published</b><br><i>With international search report.</i> |  |
| <b>(54) Title:</b> ADSORBENT MEDIUM AND ITS USE IN PURIFYING DNA<br><br><b>(57) Abstract</b><br><br>An adsorbent medium comprises particles of a cellulosic sponge material carrying functional groups. This medium is especially useful for purifying DNA in an aqueous sample.  |   |  |

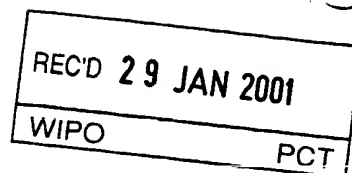
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| AM | Armenia                  | FI | Finland                                  | LU | Luxembourg                                   | SN | Senegal                  |
| AT | Austria                  | FR | France                                   | LV | Latvia                                       | SZ | Swaziland                |
| AU | Australia                | GA | Gabon                                    | MC | Monaco                                       | TD | Chad                     |
| AZ | Azerbaijan               | GB | United Kingdom                           | MD | Republic of Moldova                          | TG | Togo                     |
| BA | Bosnia and Herzegovina   | GE | Georgia                                  | MG | Madagascar                                   | TJ | Tajikistan               |
| BB | Barbados                 | GH | Ghana                                    | MK | The former Yugoslav<br>Republic of Macedonia | TM | Turkmenistan             |
| BE | Belgium                  | GN | Guinea                                   | ML | Mali   | TR | Turkey                   |
| BF | Burkina Faso             | GR | Greece                                   | MN | Mongolia                                     | TT | Trinidad and Tobago      |
| BG | Bulgaria                 | HU | Hungary                                  | MR | Mauritania                                   | UA | Ukraine                  |
| BJ | Benin                    | IE | Ireland                                  | MW | Malawi                                       | UG | Uganda                   |
| BR | Brazil                   | IL | Israel                                   | MX | Mexico                                       | US | United States of America |
| BY | Belarus                  | IS | Iceland                                  | NE | Niger  | UZ | Uzbekistan               |
| CA | Canada                   | IT | Italy                                    | NL | Netherlands                                  | VN | Viet Nam                 |
| CF | Central African Republic | JP | Japan                                    | NO | Norway                                       | YU | Yugoslavia               |
| CG | Congo                    | KE | Kenya                                    | NZ | New Zealand                                  | ZW | Zimbabwe                 |
| CH | Switzerland              | KG | Kyrgyzstan                               | PL | Poland                                       |    |                          |
| CI | Côte d'Ivoire            | KP | Democratic People's<br>Republic of Korea | PT | Portugal                                     |    |                          |
| CM | Cameroon                 | KR | Republic of Korea                        | RO | Romania                                      |    |                          |
| CN | China                    | KZ | Kazakstan                                | RU | Russian Federation                           |    |                          |
| CU | Cuba                     | LC | Saint Lucia                              | SD | Sudan  |    |                          |
| CZ | Czech Republic           | LI | Liechtenstein                            | SE | Sweden                                       |    |                          |
| DE | Germany                  | LK | Sri Lanka                                | SG | Singapore                                    |    |                          |
| DK | Denmark                  | LR | Liberia                                  |    |  |    |                          |
| EE | Estonia                  |    |  |    |  |    |                          |

INTERNATIONAL COOPERATION TREATY

PCT



# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)


|  |   |  |  |
|--|---|--|--|
| Applicant's or agent's file reference<br><b>REPO5851WO</b>                                       |   | See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)<br><b>FOR FURTHER ACTION</b> |  |
| International application No.<br><b>PCT/GB99/03290</b>   | International filing date (day/month/year)<br><b>05/10/1999</b> | Priority date (day/month/year)<br><b>06/10/1998</b>  |  |
| International Patent Classification (IPC) or national classification and IPC<br><b>B01J20/28</b> |   |  |  |
| Applicant<br><b>BIOPROCESSING LTD. et al.</b>  |   |  |  |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 7 sheets, including this cover sheet.  
  
☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 1 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☐ Certain observations on the international application

|   |  |
|---|--|
| Date of submission of the demand<br><br><b>10/04/2000</b>   | Date of completion of this report<br><br><b>25.01.2001</b>                               |
| Name and mailing address of the international preliminary examining authority:<br><br> <b>European Patent Office<br/>D-80298 Munich<br/>Tel. +49 89 2399 - 0 Tx: 523656 epmu d<br/>Fax: +49 89 2399 - 4465</b> | Authorized officer<br><br><b>Borello, E</b><br><br>Telephone No. <b>+49 89 2399 7378</b> |



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/GB99/03290

**I. Basis of the report**

1. This report has been drawn on the basis of *(substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments (Rules 70.16 and 70.17).):*

**Description, pages:**

1-6 as originally filed

**Claims, No.:**

1-11 as originally filed

12 as received on 16/11/2000 with letter of 15/11/2000

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/GB99/03290

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

|                               |      |        |                  |
|-------------------------------|------|--------|------------------|
| Novelty (N)                   | Yes: | Claims | 3,8,12           |
|                               | No:  | Claims | 1,2,4,5,6,7,9-11 |
| Inventive step (IS)           | Yes: | Claims |                  |
|                               | No:  | Claims | 1-12             |
| Industrial applicability (IA) | Yes: | Claims | 1-12             |
|                               | No:  | Claims |                  |

2. Citations and explanations  
**see separate sheet**

**VII. Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:  
**see separate sheet**

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB99/03290

**Re Item V**

**Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Reference is made to the following documents:

D1: US4332916A (B.P. THILL) 1.June.1982  
D2: WO9411103A (WILLIAMS) 26.May.1994  
D3: US4154676A (D.T. JONES) 15.May.1979  
D5: WO9117830 A (BIO ISOLATES LTD) 28.November.1991 cited in the application  
D6: US5162404A (RAINER NORMAN B) 10.November.1992

**2. Novelty**

- 2a. The document D1 discloses an ion exchange adsorbent **medium**, prepared from cellulose sponge. The medium is chemically linked with a cross-linkable polymer (cf. D1: column 1 lines 52-56, claim 1). The medium is chopped in particles for the use in a packed adsorption column (cf. D1: column 2 lines 27-31). The medium can be used free of any fibrous reinforcement. (cf. D1: column 1 lines 56-61).

Since the technical features of the claimed adsorbent medium **do not distinguish** it from the adsorbent medium already disclosed in the prior art D1, the subject-matter of independent claim 1 lacks novelty in terms of Articles 33(1)-(2)PCT.

This applies also to dependent claims 2, 4, 5, and 10

- 2b. D3 discloses an ion exchange adsorption **process** using ion exchange adsorption **mediums** made by cellulose (cf. D3: column 1 line 66-column 2 line 5). The ion exchange cellulose disclosed in D3 may be in the physical form of a sponge (cf. D3: column 4 lines 22-24, Example 1), may be used in particulate form, such as beads or granules (cf. D3: column 4 lines 25-27), may be cross-linked (cf. D3:



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB99/03290

column 3 lines 13-15, Example 1), may be used without fibrous reinforced (cf. D3: column 4 lines 8-9) and the functional groups may be DEAE (cf. D3: Example 1). D3 describes the application of the adsorbent medium to retain the DNA (cf. D3: column 2 lines 17-26, particularly line 24).

Since the technical features of the claimed adsorbent medium and the claimed method for purifying DNA **do not distinguish** them from the adsorbent medium and method already disclosed in the prior art D3, the subject-matter of independent claims 1 and 11 lacks novelty in terms of Articles 33(1)-(2)PCT.

This applies also to dependent claims 2, 4-7, 9, 10.

- 2c. D5 discloses an ion exchange **process** using ion exchange **materials** made by cellulose sponge (cf. D5: abstract). The ion exchange cellulose sponge can be reduced to a powder (cf. D5: page 13 lines 11-13), may be cross-linked (cf. D5: page 7 lines 29-32) and may be derivatised with the diethylaminoethyl group (cf. D5 page 9 lines 19-21). The functional groups make the adsorbent suitable for retaining high molecular compounds.

Since the technical features of the claimed adsorbent medium do not distinguish it from the adsorbent medium already disclosed in D5, the subject-matter of independent claim 1 lacks novelty in terms of Articles 33(1)-(2)PCT.

... seems to be given by the DEAE functional groups: therefore claim 6 lacks implicitly novelty (Art. 33(1)-(2).)

### **3 Inventive step**

The comparative tests, made with different adsorbent materials provided by the applicant with letter dated 15.11.2000 cannot be used to assess inventive step: the feature "spiked outer surface", which characterise the outer surface of the particles and is responsible for the results, does not find a basis either in the subject-matter of the claims or in the description as originally filed and cannot be derived therefrom either.

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB99/03290

- 3a. The subject-matter of claim 3 is not explicitly mentioned in the available prior art. However, according to the description (cf. page 3 lines 9-13 of the present application), this value of the water retention is merely due to the elimination of the fibrous mesh reinforcement: thus any cellulose sponge, which is not reinforced with fibrous means, like mesh or flax, should implicitly show a high(er) water retention value.

Furthermore, even if the "water retention value" specified in claim 3 would be regarded as a new technical feature, it can only be regarded as inventive, if the use of the material having such a property presents unexpected effects or properties in relation to other values. However, no such effects or properties are indicated in the application. Hence, no inventive step is present in the subject-matter of claim 3 (Art. 33(3)PCT) in view of D1, D3 or D5.

- 3b. The subject-matter of the dependent claim 8 is concerned with the dimensions of the ion exchange medium, which make it more suitable for the adsorption process and packing in the column. In view of D3, which is considered to be the closed prior art, the objective technical problem can be formulated as how to modify the ion exchange cellulose material to achieve the effect of a better flow in the adsorption/purification process.

However, the solution of claim 8 has already been proposed for similar adsorbent materials, where a crosslinked naturally-occurring polymer like agarose or cellulose (cf. D2: page 3 lines 6-14) is derivatised with DEAE functional groups,

... nucleic acids (cf. D2: page 2 lines 7-13, page 7 lines 21-30, page 9 lines 7-10, fig. 1).

It would be obvious to the person skilled in the art, namely when the same result is to be achieved, to apply this feature (= particles of 0,5 mm or more) with corresponding effect (= improve the adsorption/retaining process) to an ion exchange cellulose sponge according to document D3, thereby arriving at an ion exchange cellulose sponge according to claim 8.

Also prior art document D6 (cf. D6: claim 1) anticipates the dimensions of the cellulosic sponge particles in the range of 5 mm and above.

Therefore the subject-matter of claim 8 appears to be obvious and does not

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/GB99/03290

involve an inventive step (Article 33(3)PCT) in view of the combined disclosures of D3 and D2 and D6.

- 3c. The subject-matter of dependent claim 12 is concerned with the size distribution of the ion exchange medium particles, which makes it more suitable for the adsorption process.

The description of the present application mentions that the size of the medium particles may be either heterogeneous (page 3 line 25), or homogenised (page 5 lines 22-28). Both alternatives are presented as **equivalents** to achieve the desired effect. The limitation/selection to one of the equivalent alternatives may not be considered inventive: the skilled person may select one alternative without applying inventive activity, once he knows the problem to be solved

Therefore the subject-matter of claim 12 is not meeting the requirements set forth in Art. 33(3)PCT.

**Re Item VII**

**Certain defects in the international application**

1. The meaning of the term "HVFM" is not clear. It should be explained with the terms the letters stand for.
  
3. At page 6 lines 21-29 the comparative results shall be presented in the units according to the Rule 10.1PCT.